BIOELECTROCHEMISTRY AND BIOENERGETICS

Vol. 30 March 1993

Complete Vol. 30

CONTENTS

Chapter 1: Fundamental Mechanisms 1

Larmor precession as a mechanism for the detection of static and alternating magnetic fields
D.T. Edmonds (Oxford, UK) 3

Effect of ELF electromagnetic exposure on precipitation of barium oxalate
R. Berton, D. Beruto, B. Bianco, A. Chiabrera and M. Giordani (Genoa, Italy) 13

Electromagnetic energy deposition in living tissues by an overconstrained moment method
S. Caorsi, G.L. Gragnani and M. Pastorino (Genoa, Italy) 27

Effect of lifetimes on ligand binding modelled by the density operator
A. Chiabrera, B. Bianco and E. Moggia (Genoa, Italy) 35

Measurement of the red blood cell membrane magnetic susceptibility
M.J. Azanza, B.H. Blott, A. del Moral and M.T. Peg (Zaragoza, Southampton, Spain, UK) . . 43

An electromagnetic inverse problem related to the non-invasive reconstruction of dielectric permittivity and electric conductivity in biomedical applications
S. Caorsi, G.L. Gragnani and M. Pastorino (Genoa, Italy) 55

Tensors of dielectric permittivity and conductivity of in vitro human dermis and epidermis
A. Tavernier, M. Dierickx and M. Hinsenkamp (Bruxelles, Belgium) 65

Electromagnetic field calculations used for exposure experiments on small animals in TEM-cells
L. Martens, J. Van Hese, D. De Zutter, C. De Wagter (Gent, Belgium), L. Malmgren, B.R.R. Persson and L.G. Salford (Lund, Sweden) 73

Chapter 2: Cellular effects 83

The Na,K-ATPase as a model for electromagnetic field effects on cells
M. Blank and L. Soo (New York, NY, USA) 85

Further investigations on non-thermal effects referring to the interaction between ELF fields and transmembrane ionic fluxes
G. D'Inzeo, A. Galli and A. Palombo (Rome, Italy) 93

Mechanisms of electromechanical coupling in membranes demonstrated by transmembrane potential-dependent shape transformations of human erythrocytes
R. Glaser (Berlin, Germany) 103

A strong static magnetic field inhibits the poly-ADP-ribosylation of proteins in human kidney T1-cells
F.H.A. Schneeweiss, F. Xia, R.N. Sharan and L.E. Feinendegen (Jülich, Germany) 111

Effects of weak low frequency sinusoidal and dc magnetic fields on myosin phosphorylation in a cell-free preparation
M.S. Markov, S. Wang and A.A. Pilla (New York, NY, USA) 119

Influence of electromagnetic fields on morphology and mitochondrial activity of breast cancer cell line MCF7
S. Johann, T. Lederer, S. Mikorey, W. Kraus and G. Blümel (München, Germany) 127

DNA mutations and 50 Hz electromagnetic fields
J. Nafziger, H. Desjobert, B. Benamar, J.J. Guillosson and M. Adolphe (Paris, France) 133

The action of 50 Hz magnetic and electric fields upon cell proliferation and cyclic AMP content of cultured mammalian cells
J. Schimmelpfeng and H. Dertinger (Karlsruhe, Germany) 143

Effects of a strong pulsed magnetic field on the proliferation of tumour cells in vitro
S. Tuffet, R. de Seze, J.-M. Moreau and B. Veyret (Talence, France) 151

On the sensitivity of cells and tissues to therapeutic and environmental electromagnetic fields
A.A. Pilla, P.R. Nasser and J.J. Kaufman (New York, NY, USA) 161

Chapter 3: Tissue interaction and clinical applications 171

Effects of direct electric current on the growth of microbes and their susceptibility to antibiotics
R. Karba, M. Gubina and L. Vodovnik (Ljubljana, Slovenia) 173

Paramagnetic attraction of erythrocyte flow due to an inhomogeneous magnetic field
T. Shiga, M. Okazaki, A. Seiyama and N. Maeda (Osaka, Nagoya, Ehime, Japan) 181

Effect of electromagnetic field amplitudes on quail embryos: preliminary results
C. Debouck, M. Rooze and M. Hinsenkamp (Brussels, Belgium) 189

Longitudinal study of reproduction and development in rats exposed to a 50 kV/m, 50 Hz electric field
H. Brugere, F. Pupin and J. Lambrozo (Maisons Alfort, Paris, France) 195

Histopathology of the Harderian gland of rodents exposed to ELF magnetic fields
M.L. Picazo, M.D. Catalá and J.L. Bardasano (Madrid, Valencia, Spain) 203

Tumor treatment by direct electric current—tumor temperature and pH, electrode material and configuration
D. Miklavčič, G. Serša, M. Kryžanowski, S. Novakovič, F. Bobanovič, R. Golouh and L. Vodovnik (Ljubljana, Slovenia) 209

Endogenous potentials in two different models of human skin injuries
A. Jerčinović, F. Bobanović and L. Vodovnik (Ljubljana, Slovenia) 221

Preliminary results in electromagnetic field treatment of osteonecrosis
M. Hinsenkamp, J.P. Hauzeur and S. Sintzoff, Jr. (Brussels, Belgium) 229

Chapter 4: Environment 237

Extremely low frequency electromagnetic fields: environmental exposure levels, epidemiological studies and risk assessment
M. Grandolfo (Rome, Italy) 239

Electromagnetic fields and neoplasms with special reference to extremely low frequencies
S. Szmigielski (Warsaw, Poland) 253

Identification of the magnetic fields generated by welding machines
M. Szuba (Wrocław, Poland) 265

Chapter 5: Microwave effects 273

Ach receptor channel's interaction with MW fields
L. Tarricone, C. Cito and G. D'Inzeo (Rome, Italy) 275

Effect of low-intensity microwaves on the behaviour of cortical neurons
R.A. Chizhenkova and A.A. Safroshkina (Moscow Region, Russian Federation) 287

Permeability of the blood–brain barrier induced by 915 MHz electromagnetic radiation, continuous wave and modulated at 8, 16, 50 and 200 Hz
L.G. Salford, A. Brun, B.R.R. Persson and J.L. Eberhardt (Lund, Sweden) 293

Analysis of the effects of pulsed microwaves on cardiac activity
C.C. Tamburello, G. Tinè and L. Zanforlin (Palermo, Italy) 303

Experimental studies of brain tumour development during exposure to continuous and pulsed 915 MHz radiofrequency radiation
L.G. Salford, A. Brun, B.R.R. Persson and J. Eberhardt (Lund, Sweden) 313

The rate of elimination of chromosomal aberrations after accidental exposure to microwave radiation
V. Garaj-Vrhovac, A. Fučić and B. Pevalek-Kozlina (Zagreb, Croatia) 319

Immunomodulating effect of microwaves and ultrahigh frequency electric field in patients with systemic *lupus erythematosus*
V.D. Sidorov and S.B. Pershin (Moscow, Russian Federation) 327

Chapter 6: European project 331

New COST project 244: biomedical effects of electromagnetic fields
Z. Koren (Zagreb, Croatia) 333

Author index 339

Subject index 341